EMBEDDED SYSTEM

USB3 Vision Processing Unit

- **COM Express based embedded PC**
- **Intel i7 processor**
- **4 x USB 3.0 inputs for USB3 Vision™ cameras.**
- **2 x dual 3G-SDI outputs**

FEATURES

- Custom COM Express based embedded PC.
- Intel i7 processor – variants and other options available.
- 4 x USB 3.0 inputs designed for “USB3 Vision”.
- 2 x dual 3G-SDI outputs.
- 1 x RS-232.
- 2 x USB 3.0 system ports.
- 2 x internal SSD drive slots (M.2 SATA).
- Development Ports: 2 x USB2, 1 x GigE, 1 x DisplayPort.
- Watchdog facility.
- PCIe/104 expansion slot.
- Linux or Windows 7 Embedded operating system.
- High reliability, long product life.

OVERVIEW

The **Vision Processing Unit (VPU)** is designed to acquire image data from up to four USB3 Vision cameras, process the image stream in real-time and then output the image data using the 3G-SDI output channels.

The VPU is designed for industrial and medical use, typically embedded into an OEM machine.

Internally the unit is comprised of three circuit boards –

(a) COM Express processor module.

(b) Carrier Card (main PCB onto which the processor module and PCIe/104 modules fit.)

(c) PCIe/104 expansion card which provides the interfaces for USB3 Vision cameras. A dedicated USB power supply set at 5.1V allows for long cables.

This modular architecture allows for a wide variety of processors available from various COM Express vendors and similarly using the PCIe/104 format, other interface cards may be used.

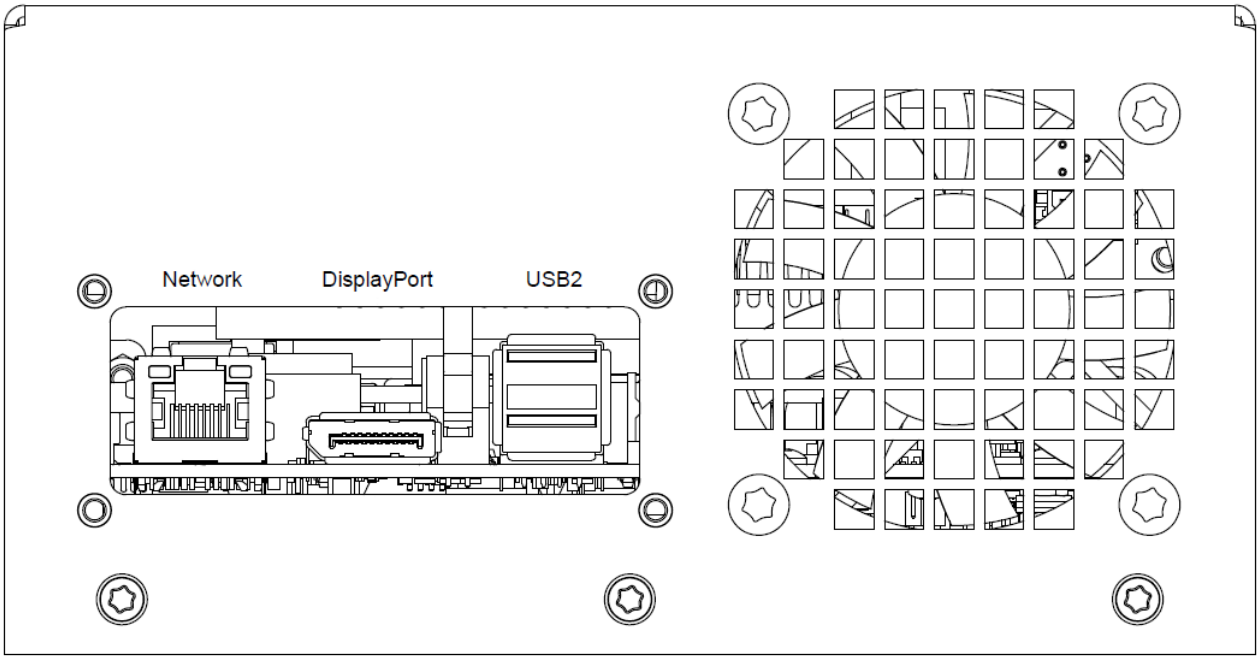
SPECIFICATION SUMMARY

Processor:	COM Express Type 6 module utilizing an Intel i7-4700EQ processor. Other processor options available on request.
Memory:	2 x 8GB DDR3 1600.
Hard Drive:	1 x 120GByte SSD.
USB3 (for cameras):	4 x USB 3.0 ports designed to support USB3 Vision cameras via PCIe/104 expansion card. (Active Silicon part number: AS-FBD-4XUSB3-5-104-2PE2) A dedicated power supply for USB VBUS provides each USB 3.0 port with a nominal 5.1V at 900mA. To cope with very long cables, this voltage can be increased as a hardware option.
USB3 (general purpose):	2 x USB 3.0.
3G-SDI outputs:	4 x 3G-SDI outputs using BNCs connectors arranged as two pairs such that each pair has the same data on each output.
RS-232	1 x RS-232 port.
Reset Connector:	3-pin connector for standard PC reset/reboot and power down.
LEDs:	5 x 3mm bi-color green/red LEDs for user status feedback.
Development Port:	1 x GigE network, 1 x DisplayPort and 2 x USB2. (Under panel marked “Factory Use Only”.)
Earthing Point:	M4 threaded blind hole, 7mm minimum thread depth.
Expansion Options:	PCIe/104 format expansion slot pre-fitted with 4-port USB 3.0 Host Controller.

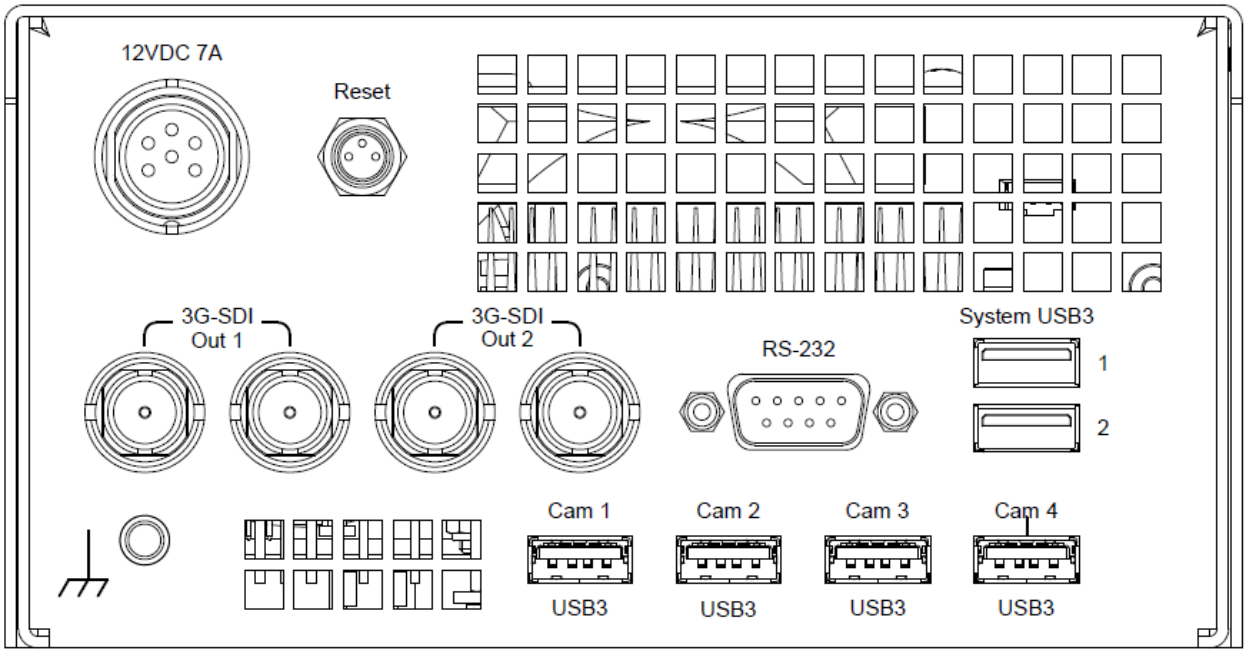
CONFORMANCE

COM Express	COM Express Type 6 compliant processor module.
CE	CE marked and compliant with the relevant EU directives as listed below.
RoHS	Conforms to RoHS2, the European Union’s Restriction on Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment Directive 2011/65/EU.
EMC	Compliant with EN 55022:2010 (class A) and EN 55024:2010 in accordance with EU Directive 2004/108/EC Electromagnetic Compatibility.
REACH	Compliant with the requirements of REACH (Registration, Evaluation, Authorization and Restriction of Chemicals, EC 1907/2006), the European Union’s chemical substances regulatory framework for Substances of Very High Concern.
UL	All printed circuit boards used in this product are manufactured by UL recognised manufacturers and have a flammability rating of 94-V0.
FCC	Compliant with FCC Rules for Class A digital devices.

Front View



Rear View



PHYSICAL AND ENVIRONMENTAL DETAILS

Dimensions:	160mm wide by 220mm deep by 83mm high.
Weight:	1506g
Power Supply	12V +/- 5%. Requires monotonically rising voltage on power up as per ATX specification.
Power Consumption: *(VPU only)*	100% CPU load @ 12V, typical 60W. 50% CPU load @ 12V, typical 50W. 0% CPU load @ 12V, typical 18W. (All figures excluding any attached peripherals.)
Power Consumption: *(VPU plus 3x active USB cables and cameras in typical application environment)*	100% CPU load @ 12V, typical 60W. 3x Active Cables: typical 3W, 3x Cameras: typical 9W. Total: typical 72W.
Storage Temperature:	-40°C to +70°C.
Operating Temperature:	Recommended: 0°C to +40°C (ambient environment). Absolute Maximum: +50°C (ambient environment), at which CPU "throttling back" may occur depending on CPU load.
Relative Humidity:	10% to 95% non-condensing (operating and storage).
Pressure:	500 mbar to 1060 mbar (operating and storage).

ORDERING INFORMATION

PART NUMBER	***DESCRIPTION***
AS-LM01-CME-SYS-B	USB3 Vision Processing Unit (VPU).

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